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ABSTRACT

At a large Midwestern university, the distance learning administration has recently found a need to develop a preassessment instrument for its distance learning students. The instrument would be made available to students to help them determine their readiness for the unique nature of distance learning. This study sought to determine whether the student characteristic of self-directedness correlates with student success in Web-based courses, as defined by course grade. The researchers chose to implement the Self-Directed Learning Readiness Scale (SDLRS) (Guglielmino, 1977), a 58-item, 5-point Likert instrument that was e-mailed to all Web-based students. The researchers asked Web-based instructors to provide letter grades for the students and give their assessments of each student's habits and attitudes for success in the course and each student's technical skills. Seventeen students returned completed instruments, and instructors provided data on 39 Web-based students. The results of the study show that self-directedness was not a good indicator of success. The instructors' ratings of students' attitudes and habits was the best indicator, and students' technical skills were a good indicator in a smaller sample in which students' grades were higher. The challenges of gathering data from distance education students are also discussed. (Author/SLD)

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Correlating Self-Directed Learning With Distance Learning Success

Paper presented at the Annual Meeting of the
Eastern Educational Research Association,
Clearwater, FL, February, 2000

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ABSTRACT

At a large mid-western university, the distance learning administration has recently found a need to develop a pre-assessment instrument for its distance learning students. The instrument would be made available to students to help them determine their readiness for the unique nature of distance learning. This study sought to determine whether the student characteristic of self-directedness correlates with student success in web-based courses, as defined by course grade. The researchers chose to implement the SDLRS (Guglielmino, 1977), a 58-item, five-point Likert instrument which was emailed to all web-based students. The researchers had the web-based instructors provide letter grades for the students and provide their assessments of each student's habits and attitudes for success in the course and each student's technical skills. Seventeen students returned completed instruments and instructors provided data on thirty-nine web-based students. The results of the study showed that self-directedness was not a good indicator of success. The instructors' rating of students' attitudes and habits was the best indicator and the students' technical skills were a good indicator in a smaller sample in which the students' grades were higher. The researchers also discuss the challenges of gathering data from distance education students.

Correlating Self-Directed Learning With Distance Learning Success

Taking courses in the convenience of one's own home has been available to Americans for decades. Some universities, such as the University of Nebraska, offer correspondence courses for clientele who, for any one of several reasons, find it difficult to commute to the campus.

Students taking these traditional correspondence courses would typically communicate with the instructor through postal mail. However, since the advent of email and the World Wide Web, students with a computer can exchange documents and communicate with an instructor miles away. A student who is geographically separated from the campus can complete the equivalent work of an on-campus student in the same amount of time. "Distance learning", as it has become known, has become a mild interest to some colleges and a strong initiative at others. Universities are anxious to take part of this new methodology because of its potential and for fear of new competition. However, they are also concerned that the quality of courses remain and that they are properly serving their students.

NCA, the organization that accredits universities, is concerned about the course quality and student service, as well. As a result, NCA has developed a number of distance learning guidelines for institutions delivering courses at a distance and seeking accreditation. One of the guidelines states that, "The institution assesses student capability to succeed in distance education programs and applies this information to admission and recruiting policies and decisions." There is little information for college distance education administrators to use in constructing and administering this

assessment since these courses have only existed for about four to five years and the number of students taking them is still relatively low.

College distance education administrators need information regarding what student factors most highly correlate with success in distance learning courses. Much of the discussion about these factors suggests that the student's technical skills and one's self-motivation are indicative of success. The popular conception among most college administrators in this field is that the typical distance student is working during the day, possibly has a family, and completes his or her coursework after the children are in bed for the night. Other popular conceptions are that students are place-bound by work or other circumstances, but have the intention to pursue degree at institution with prestige. Therefore, factors such as age, number of work hours, and previous academic success may be also be indicators of success in these on-line courses. This study will attempt to find student-related factors that correlate with their academic success in a distance learning course.

Review of Related Literature

On October 19, 1999, an English professor from Louisiana posted a message to a distance education mailing list (DEOS-L) stating that he was preparing information to promote his upcoming on-line course, but wanted to include information regarding the "kind of student who is likely to succeed". The professor inquired as to whether anyone on the list knew of the characteristics of a successful student. (Butcher, October 19, 1999.) Subsequent posts revealed that most information that university personnel have is anecdotal in nature. One respondent speculated that students needed to have an "'internal

locus of control' which means that that they are inner-directed and consider themselves in control of their own destiny." (Worthington, Oct. 20, 1999). In another post, a college faculty instructor found evidence to support her hypothesis that students who possess the quality of "field independence" appear more comfortable during the on-line course and are able to work more independently. Separating field independent from field dependent learners at the beginning of the term enabled the instructor to identify which students needed more attention and maximized the learning experience for everyone in the class. (Carey, October 20, 1999.)

The on-line discussion also revealed that many universities already have web-based self-tests for potential students to take in order to determine if they have the characteristics of successful distance learner. However, of ten surveys reviewed by the researchers, none of them indicated that they were based on any type of research on successful distance learners.

One researcher found that the successful online student in a specific graduate program did not use America ONLINE, had a higher preference for learning by reading, had a lower preference for learning by direct experience, had a higher expectation for success, worked fewer hours, and had reliable internet access. (Gilbert, October 22, 1999.) McVay (1998) suggests that potential distance learners need to be independent, self-directed learners that can set their own schedules and can read course materials in place of attending a lecture. The successful student also is able to apply reflective learning (reflecting on one's learning experiences and their personal effectiveness), constructing knowledge, and complex reasoning to their learning process. Besides these

personal characteristics of distance learners, McVay also states that the students must possess adequate technical skills as well.

Of the hypothesized and tested personal characteristics of on-line learners, the one that this research will focus on is self-directedness. A self-directed learner "is one who takes responsibility for his or her own learning." (Brockett & Hiemstra, p. i) In creating her self-directed readiness scale as part of a study, Guglielmino identified skills and attitudes frequently associated with self-directed learning. A factor analysis of the instrument revealed eight factors (listed in the section, "Methodology") associated with the self-directed learner. A subsequent study using the instrument found a significant correlation between self-directed learning and right-hemisphere style of learning as well as creativity. The study also found a negative significant correlation between self-directed learning and left-brained style of learning. Therefore, there appears to be a link between creative cognitive processes and self-directed learning. (Brockett & Hiemstra, 1991. p. 57).

Methodology

There are two established instruments that measure self-directedness. The SDLRS (Self-Directed Learning Readiness Scale) was developed in 1977. It is a 58-item Likert scale that produces one score and has a reliability coefficient of .87. A factor analysis of the instrument by the developer determined the following eight factors:

- Love of learning
- Self-concept as an effective, independent learner
- Tolerance of risk, ambiguity, and complexity in learning

- Creativity
- View of learning as a lifelong, beneficial process
- Initiative in learning
- Self-understanding
- Acceptance of responsibility for one's own learning

Besides the initial study in which the instrument was developed, the following study to use the instrument established support for the construct validity of the instrument. (Brockett & Hiemstra, 1991. pp. 56-57).

Another instrument designed to measure self-directed learning is the OCLI (Oddi Continuing Learning Inventory). This instrument contains 26 seven-point Likert items and has a reliability coefficient of .75. After reviewing samples of both the SDLRS and the OCLI, the researchers determined that only one instrument should be chosen for the study in the interest of increasing the return rate percentage and minimizing costs. The SDLRS was chosen as the instrument due to the nature of the items and their suitability to the intended population.

One of the researchers of this study is employed at a large, mid-western university and has been charged with the responsibility of instituting an pre-assessment instrument to be used by potential distance learners to determine readiness. During the Fall of 1999, approximately one-hundred students at the university registered for web-based distance courses offered by nine different instructors, either from the main campus or from the satellite campus. This group of students would become the sample of the study.

The researchers constructed a demographic instrument for the students to accompany the SDLRS. The demographic instrument asked respondents to select an age

range, to self-report a GPA, to self-report the numbers of hours a week on average spent working at a paying place of employment, and to rate him/herself on a scale of one to five on the possession of attitudes/habits needed to be successful in the course. The researchers also constructed an instrument for the instructors in which they were asked to report the students grade (by last four digits of the student's social security number), to rate the students (from one to five) on attitudes/habits needed to be successful in the course, and to rate the students (from one to five) on their technical skills.

It was the understanding of the researchers that the vast majority of the web-based students were to come to campus for their final exam, but it was learned just prior to final exam week that the college offering the majority of the courses had left the nature of the final exam to the discretion of the instructor. One instructor cautioned that there would be very little time after the final exam for students to complete a survey instrument. Therefore, the researchers obtained permission from the author of the SDLRS to transfer the instrument into a linear, email-based format. After completing the translation of the instrument, the author approved its new format. The instrument was emailed to the instructors who were asked to forward it to their students, including those who may have withdrawn. Upon completion of the instrument, students were asked to return the completed instrument to a graduate student who transferred the data anonymously to the instruments coded by the last four digits of the student's social security number. Data analysis of the SDLRS is included with the purchase of 100 or more instruments and so an outside researcher produced SDLRS scores for each of the respondents.

One of the instructors actually met with the students individually as they came in on their own time during final exam week to take a computer-based final exam. The

instructor agreed to administer the instrument to the students, but later decided to send the instruments home with the students with a stamped envelope addressed to the researcher. None of the twenty instruments were returned from this sample. Of the sixty-nine remaining students that received the instrument via email, seventeen returned the instrument. All of the instructors who emailed the instrument returned their student assessments and student grades, so there was a set of complete, correlated data for seventeen students.

The researchers then analyzed the data with the intent of determining what variable most highly correlated with success in the course which was defined as the student's final grade. Particular interest was paid to whether the SDLRS score correlated highly with the student's grade as well as whether either the student's own assessment or the instructor's assessment correlated with the SDLRS.

Data Analysis

Of the eighty-nine students who received the instrument, seventeen returned the completed form along with demographic information regarding their age range, G.P.A., number of paid hours worked during a week, and a rating from one to five (five being the lowest) of their personal assessment of their attitudes/habits necessary to be successful in the course. Final letter grades were obtained for sixty-nine students. Instructor assessments of their students' attitudes/habits necessary to succeed and their students' technical skills needed to succeed were obtained for thirty-nine students. Of these thirty-nine students, only thirty-one had obtained a final grade other than an incomplete. Each of the seventeen students who returned his/her instrument had a corresponding letter

grade (including one "withdraw") and most had corresponding instructor ratings. None of the students who returned the instrument had an "incomplete" grade for the semester; all had obtained a letter grade with the exception of the "withdrawn" student who (the instructor noted) withdrew because his hard disk failed and he did not have the money for a new one.

Considering the instructor data alone, the instructors reported thirty-nine student's grades (by the last four digits of their social security number) and their assessment of the students' technical skills and habits/attitudes. The frequency counts of the grades reported appear in Table 1.

Grade	Frequency
A	14
A-	5
B+	4
B	4
B-	2
C	1
F	2
Withdrawn	2
Incomplete	5

Table 1. Frequency of letter grades as reported by instructors.

The frequency reports of the technical skills and attitudes/habits appear in Table 2.

Assessment of technical skills	Frequency	Assessment of attitudes/habits	Frequency
Had no technical skills	1	Did not have the right attitudes/habits	1
Had very little technical skills	4	Had very few of the right attitudes/habits	8
Had some technical skills	13	Had some of the right attitudes/habits	6
Had good technical skills, but some deficits	15	Had good attitudes/habits, but some deficits	15
Had wonderful technical skills	6	Had wonderful attitudes/habits	9

Table 2. Frequency of technical skills and attitudes/habits ratings reported by instructors.

Using the instructor data alone, only the thirty-one students who completed the course for a final grade were analyzed for this study. (Each survey included a final grade (Grade) and an instructor's measure of both the student's technical skills and his/her attitude/habits to succeed (Student Attitude). The final grade was converted to a numerical value based on a 4.0 scale (0-4 corresponding to grades of F to A, respectively) with intermediate grades adjusted by a factor of 0.3. (For example, a B+ corresponded to a 3.3 and a B- corresponded to a 2.7.) As mentioned earlier, instructor measurements of student technical skills and attitude were each measured on a 5-point scale. The largest correlation between variables occurred between Grade and Student Attitude (r=.577), followed by Technical Skills and Attitude (r=.479). There was virtually no relationship between Grade and Technical Skills (r=.101). The results are summarized in Table 3.

	Correlation between:	**Correlation Coefficient**
n=31	Grade and Student Attitude	r=.577
n=31	Technical Skills and Attitude	r=.479
n=31	Grade and Technical Skills	r=.101

Table 3. Correlation between instructor-provided variables.

Seventeen students returned SDLRS instruments and the accompanying demographic data. Since one student took three classes, there were nineteen paired sets of data. Similar to the instructor evaluations, each case included a final grade for the student (Grade), an instructor's measure of both the student's technical skills (Technical Skills) and his/her attitude (Student Attitude). Each case also included the composite SDLRS score (SDLRS), the student's self-reported G.P.A. (GPA), the weekly number of paid, outside work hours (Work Hours), and the student's self-evaluation of attitude/habits (Self Attitude).

Numerical grades were calculated using the same procedures as the instructor evaluations above. The SDLRS composite score is an integer ranging from 58 to 290, where the value is directly related to the respondent's tendency for self-directedness. Hours is a self-reported integer number and Self Attitude, similar to Student Attitude, is reported on a 5-point scale. The correlation coefficients between the student's Grade and the other variables are shown in Table 4.

	Correlation between GRADE and:	**Correlation Coefficient**
n=19	Student Attitude	r=.6073
n=19	Technical Skills	r=.6017
n=19	Self Attitude	r=.4970
n=19	GPA	r=.4832
n=19	Work Hours	r=-0.2013
n=19	SDLRS	r=-0.2690

Table 4. Correlations between the student's grade and other variables.

Table 5 shows the correlation coefficients when the SDLRS score is used as the independent variable. In each case, the correlation coefficients indicated little to no relationship between the variables.

	Correlation between SDLRS and:	**Correlation Coefficient**
n=19	Work Hours	r=.2404
n=19	Technical Skills	r=.0410
n=19	GPA	r=-0.0549
n=19	Student Attitude	r=-0.1398
n=19	Self Attitude	r=-0.1728
n=19	Grade	r=-0.2690

Table 5. Correlations between the student's SDLRS score and other variables.

Frequency counts were obtained on the age range and GPA from the seventeen students who responded to the survey. The frequencies are reported in Tables 6 and 7. The frequency of course grades for the student sample is reported in Table 8.

Age Range	Frequency
Under 23	0
23-26	5
27-30	2
31-35	6
36-40	3
41-45	1
Over 45	0

Table 6. Frequency of reported age range of student respondents.

GPA	Frequency
3.0-3.25	2
3.26-3.5	6
3.51-3.75	3
3.76-4.0	5

Table 7. Frequency of reported GPA's of student respondents.

Grade	Frequency
A	9
A-	3
B+	2
B	3
B-	0
C	1
F	0
Withdrawn	1
Incomplete	0

Table 8. Frequency of letter grades within the student respondent sample.

Limitations

The sample size for this study was greatly restricted by the fact that the web-based students in the web-based graduate program were no longer required to attend campus for the final exam. Had the researchers known this at the beginning of the study, they would have attempted to increase the number of students studied. However, all of the web-based students who attended this large, mid-western university were included in this study. Therefore, to increase the sample, the researchers would have had to include web-

based students from other universities and would then reduce the probability of obtaining correlating instructor data to match the student responses. More on this issue will be discussed in the conclusions.

Also, the SDLRS was analyzed by an outside statistician as part of the purchase price of the instruments. Although the literature indicated that a factor analysis revealed eight factors in the instrument, no sub-scale data was given to the researchers by the time of this paper presentation.

Conclusions

The results of the data analysis of this study suggests that the SDLRS instrument is not a good indicator of success in distance learning courses when success is defined by the final course grade. Data obtained by the instructors seemed to indicate that the students' habits and attitudes were the best indicator of academic success in the course. Technical skills seemed to emerge as a good indicator of academic success in the smaller sample, where the students' GPA and their course grades were relatively high, but technical skills did not prove to be as strong an indicator in the larger, more heterogeneous sample.

The researchers hope to obtain the sub-scale data for the student respondents based on the eight factors. This information would be extremely helpful in creating the pre-assessment instrument for potential on-line learners at the university, particularly if any of those factors of self-directedness prove to be significantly correlated with the a good grade in the course. However, based on the preliminary data outlined in this study, self-directedness is not a strong indicator of academic success in an on-line course.

The relatively high correlation between the instructor's assessment of the students' attitudes and habit and the course grade seemed to indicate that the instructors believe the "softer" skills that ones brings into a web-based course are a stronger indicator of academic success in the course. The researcher (as the Coordinator of Distance Education) will follow-up with the web-based instructors in this study in order to determine what they specifically identify as the habits and attitudes necessary to succeed. This qualitative data can become the content of a preliminary student pre-assessment and can become the variables to be used in future quantitative studies.

The results of this study also revealed that while the technical skills of students who obtain a good course grade appear to be adequate, that correlation dissipates as the range of student grades increases to include the lower grades. Therefore, students who may be evaluated by the instructor as having good technical skills may not have necessarily obtained a good grade. This data, again, emphasizes that the softer skills associated with a student's attitudes and habit play a stronger role in the student's success in the course.

Finally, one lesson that researchers learned serendipitously is that collecting student data from on-line students can be extremely difficult particularly when the student's anonymity needs to be protected and when the researcher attempts to obtain corresponding instructor data. Web-based students are, by definition, geographically separated from their instructors and from each other which eliminates the possibility of sampling a "captive audience" as one would a class on a college campus. Also, the best method of communication to reach web-based students is by email which cannot be sent anonymously. Last, the sample of web-based students, although growing, is still

relatively low. Therefore, without having access to a "captive audience", the best a researcher can do is to distribute instruments widely and to provide an anonymity filter that appeals to a potential respondent's trust. Until the number of web-based students increases to a reasonable size, these two provisions may keep researchers away from doing further work with the population students who may, as a group, possess unique skills and needs.

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